

## CHAPTER 1.0 EXECUTIVE SUMMARY

Every year, an average of about 6 million cubic yards (mcy) of sediments must be dredged from shipping channels and related navigation facilities throughout the San Francisco Bay Area. Over the next 50 years, an estimated 300 mcy of dredged material will need to be disposed. Under current regulatory conditions, the vast majority (80 percent or more) of the dredged material would continue to be disposed at designated sites in the Bay, with only a small percentage of material — mainly from large federally funded civil works projects — disposed outside the Estuary at the new offshore ocean site or used in “beneficial reuse” applications such as wetland restoration. Applied individually, the primary federal and California laws, regulations, and policies directly governing management of dredged material tend to focus on one disposal environment at a time. They have not been explicitly coordinated in a manner that simultaneously minimizes environmental impacts and maximizes environmental benefits to the region as a whole. A comprehensive, interagency approach that combines and coordinates the authorities and policies of the federal and state agencies responsible for dredged material management in the San Francisco Bay Area — and that in some ways exceeds the minimum requirements of those individual regulations and policies — is needed to improve this situation.

Starting in 1990, the U.S. Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers (COE), the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), the Bay Conservation and Development Commission (BCDC), and the State Water Resources Control Board (SWRCB) joined together with navigation interests, fishing groups, environmental organizations, and the public in a cooperative effort to establish a comprehensive Long-Term Management Strategy (LTMS) for Bay Area dredged material. The goals are to conduct necessary dredging and dredged material disposal in an environmentally sound and economically prudent manner, to maximize the “beneficial reuse” of dredged material, and to develop a coordinated permit review process for dredging projects. This final “Policy Environmental Impact Statement/Programmatic Environmental Impact Report” (Final EIS/EIR) is being jointly published by the LTMS agencies to select the overall long-range approach that will be used to develop a detailed Management Plan. Three alternative long-term approaches are evaluated in this EIS/EIR that would achieve the LTMS goals to various extents.

Each of these “action” alternatives includes a more balanced distribution of dredged material disposal in a combination of all three of the potential placement environments (at existing sites within the Estuary, offshore in the Pacific ocean, and at a variety of upland or wetland disposal or reuse sites). Each of them also represents a substantial long-term decrease in disposal within the Estuary and a substantial long-term increase in beneficial reuse of dredged material. The No-Action Alternative, a continuation of current conditions with only very limited ocean disposal and upland/wetland reuse, is also evaluated.

The EPA, COE, SFBRWQCB, BCDC, and SWRCB have selected Alternative 3, which emphasizes a balance between ocean disposal and beneficial reuse at upland/wetland sites with limited in-Bay disposal, as the preferred alternative. However, the goals of the alternative cannot be achieved immediately. Therefore, a transition period will be required. The transition from current conditions to Alternative 3 will occur, in part, as new upland/wetland reuse sites become available and feasible to be used. As this occurs, in-Bay disposal can decrease further.

It is important to note that the larger target volumes for upland or wetland reuse associated with Alternative 3 would be difficult to fully achieve under existing agency authorities and cost sharing requirements. This EIS/EIR includes a preliminary discussion of the kinds of steps that could be taken in the future — including some that are outside the agencies’ control — to more fully achieve the long-term beneficial reuse goals of the preferred alternative. However, project-specific decisions (permits or other authorizations) at any time must be based on the relevant regulatory provisions in place at that time. The LTMS agencies will develop a detailed Management Plan that implements the selected alternative to the greatest extent possible consistent with existing laws, regulations, and agency authorities. The Management Plan will be updated in the future as environmental conditions or the agencies’ authorities and regulations change.

### 1.1 PURPOSE AND STRUCTURE OF THIS DOCUMENT

This Policy EIS/Programmatic EIR is an important milestone in the ongoing regional effort to minimize environmental impacts and maximize environmental benefits of dredging and dredged material disposal in

an economically sound manner. This regional effort — the Long-Term Management Strategy (LTMS) for San Francisco Bay Area dredged material — is a partnership process between federal and state agencies, navigation interests, fishing groups, environmental organizations, and the public. The basic purpose of this EIS/EIR is to select a long-term management strategy (LTMS) that will guide the dredged material management decisions of regional agencies in the San Francisco Bay Area over the next 50 years.

The structure and sequencing of the information presented in this EIS/EIR differs from the “standard” approach recommended in the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). A more systematic approach is used to assist readers in understanding the complex issues associated with dredged material management in the San Francisco Bay region. In particular, this EIS/EIR uses a multiple-step policy design and evaluation process. Chapter 3, a special chapter on dredging and technical sediment management issues, provides background information necessary to understanding why certain resources are described in Chapter 4 as being of concern, while other resources are quickly screened out as being generally unaffected by dredged material disposal or reuse. The policy-level mitigation measures discussed in Chapter 5, many of which reflect existing agency requirements, ensure that other kinds of potential adverse impacts will be avoided. By screening out some impacts that could otherwise occur, these policy-level measures further focus the evaluation of potential impacts and benefits. Chapter 6 begins with a “generic” impacts analysis, which is the last screening step, resulting in the final set of alternatives — No-Action, and three “action” alternatives. Each of the final alternatives represents a different distribution of dredged material among the three placement environments (in-Bay, ocean, and upland/wetland reuse) and each alternative includes all of the policy-level mitigation measures listed in Chapter 5. Additional policy-level mitigation measures, identified as needed based on the evaluation of potential impacts, are presented at the end of Chapter 6.

A fundamental aspect of the LTMS is to minimize cumulative environmental impacts and to maximize cumulative environmental benefits to the region as a whole. Similarly, the LTMS effort is seeking to manage dredged material as a valuable resource for long-term benefits, as opposed to viewing it as a waste to be disposed of as inexpensively as possible in the

short term. As a programmatic document, this EIS/EIR is intended to guide management decisions for the next 50 years. Cumulative impacts and benefits and short-term versus long-term issues are, therefore, addressed throughout the document. Cumulative effects and short-term versus long-term productivity are also summarized in chapters 8 and 9, respectively.

## 1.2 NEED FOR A LONG-TERM MANAGEMENT STRATEGY

Large-scale dredging has occurred in the Estuary for over 100 years. Dredging for navigation purposes occurred as early as the 1850s to maintain channels for a commuter ferry and other vessels into Oakland, and dredges commonly worked the San Francisco waterfront's berthing areas and wharves in the 1860s and 1870s. Dredged material from navigation channels in the Bay had historically been disposed at numerous locations, primarily within the Estuary (referred to as in-Bay disposal).

Today there are three in-Bay disposal sites designated for multiple users: the Carquinez Strait, San Pablo Bay, and Alcatraz Island disposal sites. The Alcatraz site is the most heavily used of the in-Bay sites, receiving up to 4 mcy of sediment per year from Central and South Bay dredging projects. Another 1 to 2 mcy of dredged material per year is disposed at the Carquinez Strait site, and up to 500,000 cubic yards (cy) per year at the San Pablo Bay site. Two additional aquatic disposal sites, the Suisun Bay site and the San Francisco Bar Channel site just outside the Golden Gate, are restricted to disposal of clean sand from COE maintenance dredging projects.

Although sediments dumped at the Alcatraz site were expected to disperse to the ocean, in late 1982 it was discovered that disposal activities had created a large mound at the site. Despite various disposal and site management efforts, mounding at the site persisted and even intensified. It became apparent that the capacity of the Alcatraz site would not be sufficient to accommodate the substantial volumes of material that would be generated by new work projects that had been planned for construction over the next several years.

While the navigation problems posed by mounding and the longer range management problems implied by a physical capacity limitation at the Alcatraz site were coming to light, concerns regarding the environmental impacts of dredged material disposal on

fisheries and other ecological resources of the Estuary were being expressed by research institutions, environmental groups, the fishing community, and other members of the public. Mounting scientific and public concern about the health of the Estuary overall, increasing controversy about the effects of dredging and disposal within the Estuary, and the realization that disposal volume limitations were necessary at the Bay Area's primary disposal site led the various agencies with authority over different aspects of dredging to begin to consider changes to their regulatory requirements. However, most actions continued to be taken on a fragmented, case-by-case and agency-by-agency basis. The results were often lack of predictability for dredging project sponsors, lack of public confidence that environmental resources were adequately being protected and, ultimately, project delays and related economic impacts to ports and other dredgers. Regulatory certainty, from many perspectives, was at an all-time low. This period of disposal site limitations, environmental concerns, fragmented agency management, and resulting dredging project delays eventually became known as "mudlock."

### 1.3 OVERVIEW OF THE LTMS EFFORT

In response to these problems, in 1990 the COE, the EPA, the SFBRWQCB, the BCDC, and the SWRCB initiated a long-range interagency planning process for dredged material management. The resulting effort — the LTMS for San Francisco Bay Area Dredged Material — was organized to create a partnership among the state and federal agencies, navigation interests, fishing interests, environmental organizations, and the public to find acceptable dredged material disposal alternatives for the region. The LTMS planning area is shown in Figure 1.3-1.

The long-term dredging and disposal need is estimated to be approximately 300 mcy over the next 50 years, or an average of about 6 mcy per year. The LTMS seeks to develop a technically feasible, environmentally suitable, and economically prudent long-range approach to meeting this need. The majority of material dredged from the Estuary is suitable for unconfined aquatic disposal (SUAD), and for a variety of kinds of beneficial reuse. The alternatives presented in the EIS/EIR focus primarily on distribution scenarios for SUAD material. However, 10 to 20 percent of the Estuary's dredged material is not suitable for unconfined aquatic disposal (NUAD) due to contamination and/or toxicity to aquatic organisms (20 percent is used as a worst-case

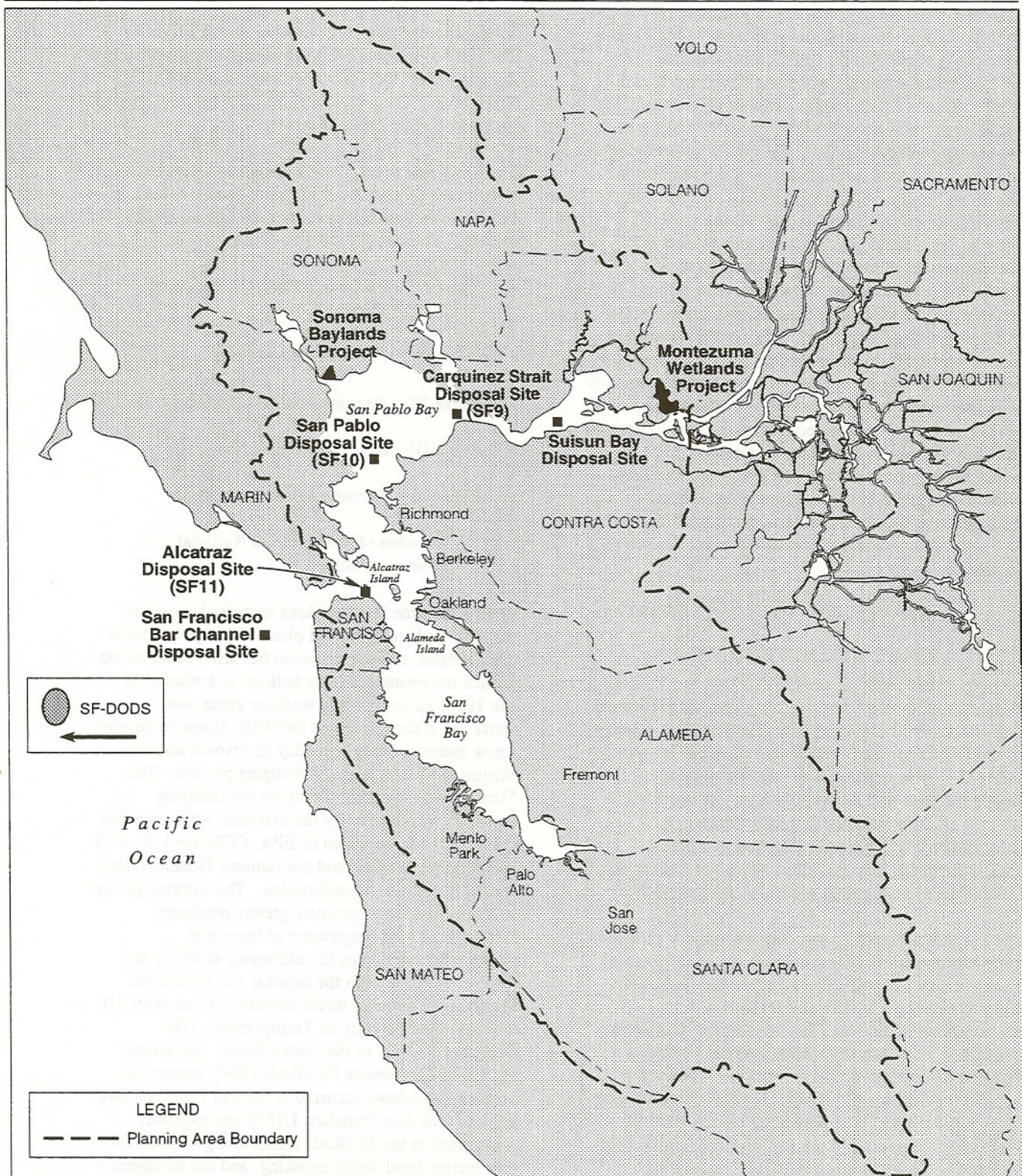
assumption for planning purposes in this EIS/EIR). The need to manage NUAD material at appropriately designed sites does not vary under any of the LTMS alternatives. Chapter 3 discusses management options for NUAD material in detail.

The San Francisco LTMS is being conducted in five phases (see section 2.1.3 for more detail). This EIS/EIR represents *Phase III* of the overall LTMS process. The five LTMS phases are:

- *Phase I: Evaluate Existing Management Options*
- *Phase II: Formulate Alternatives*
- *Phase III: Detailed Analysis of Alternatives*
- *Phase IV: LTMS Implementation*
- *Phase V: Periodic Review and Update*

#### 1.3.1 Relation of the LTMS to National Dredging Policy

During the time that Bay Area agencies have been working to develop a local plan for dredged material management, national attention has also been directed toward reviewing dredging policies as a whole. In late 1993, an interagency working group was convened at the request of the White House to develop a new national dredging policy that would address existing problems with the dredging process. The "Interagency Working Group on the Dredging Process" was chaired by the Maritime Administration (MARAD) and consisted of EPA, COE, the U.S. Fish and Wildlife Service, and the National Oceanographic and Atmospheric Administration. The working group stressed the need to promote greater regulatory certainty, and the importance of long-term management strategies for addressing dredging and disposal needs at both the national and local levels. Many of the national issues identified in the MARAD report to the Secretary of Transportation (*The Dredging Process in the United States: An Action Plan for Improvement* [MARAD 1994]) mirror the problems that have occurred in the San Francisco Bay region. The San Francisco LTMS was expressly recognized in the MARAD report as a good example of effective local decisionmaking, and the interagency working group's proposed solutions include undertaking more LTMS-like cooperative efforts nationwide.



**Figure 1.3-1. LTMS EIS/EIR Planning Area**

## 1.4 EIS/EIR SCOPING PROCESS

The EIS/EIR scoping process effectively began when the LTMS was initiated in 1990. It is summarized here and described in more detail in section 2.3. Interested parties, invited to participate in the process of framing the dredged material management issues that needed to be programmatically analyzed in the EIS/EIR, played a major role in developing and reviewing Phase I and Phase II of the LTMS. This extended dialogue, afforded through the LTMS technical workgroups, Policy Review Committee meetings, and the Management and Executive Committee meetings, provided significant early opportunities for both formal and informal public input into the agency policy development process.

Comments related to dredged material management also arose during the public review and comment periods for individual dredging projects and during the review process for development of new dredged material disposal and reuse sites. Public comments expressed on these and other projects were important additional sources of information to the LTMS agencies in deciding whether to prepare an EIS/EIR for the LTMS program, and what its scope should be.

In 1992, the LTMS agencies decided to prepare a Policy EIS/Program EIR as part of Phase III of LTMS to evaluate and solicit additional public input on different overall approaches for dredged material management in the region. An Interested Parties workgroup was formed to assist with the scoping and development of the EIS/EIR. The LTMS agencies published a Notice of Intent/Notice of Preparation (Scoping Notice) in July 1993, which announced the decision to prepare an EIS/EIR and listed a preliminary set of alternative approaches.

The release of the Scoping Notice and the subsequent public comments began the formal scoping process for the EIS/EIR. There have been over 10 public scoping meetings, including with the workgroups and the LTMS Policy Review Committee (which also includes interested members of the public), since the formal scoping process began. The release of the LTMS Progress Report and Interim Management Plan in August 1994 afforded another opportunity for public comment on the dredged material management activities.

The major issues of concern raised by the EIS/EIR scoping process to date can be broadly grouped into the following five overall issue statements:

1. There is a need to ensure adequate, suitable disposal capacity for the projected volumes of dredged material;
2. There is a need to ensure appropriate environmental protection;
3. There is a need to improve coordination and integration of agency policies governing the management of dredged material in the region;
4. There is a need for a regional framework to facilitate the use of dredged material for beneficial purposes; and
5. There is a need to identify appropriate funding mechanisms to address these issues and to facilitate the overall goals of the LTMS.

Taken together, these concerns were used to define the Need for Action (see section 2.4) evaluated in this EIS/EIR. They also formed the basis for the Evaluation Criteria used to compare the alternative management approaches (see sections 1.7.1 and 2.5).

## 1.5 STUDY LIMITATIONS

During the scoping process, the public commented on several elements of dredging and disposal that, while part of the overall LTMS effort, are outside the scope of this EIS/EIR (see section 2.6.2 for more detail). In most cases, these issues will be addressed in the next LTMS phase: development and implementation of the comprehensive Management Plan. The issues raised that are considered outside the scope of this EIS/EIR include the following:

- *Evaluating the specific impacts of dredging (as opposed to disposal);*
- *Site-specific analyses for designation of new in-Bay, ocean, or upland/wetland sites;*
- *Evaluating the need for individual dredging projects, or specific channel depths or configurations;*
- *Enforcement of permit terms and conditions;*
- *Evaluation of economic impacts on individual projects or dredgers; and*
- *Recommending specific site management and monitoring activities for specific sites.*

## 1.6 DEVELOPMENT OF ALTERNATIVE MANAGEMENT APPROACHES

Alternative approaches to long-term management of the Bay Area's dredged material are developed via a multi-step process. An initial screening of potential approaches is first conducted. The resulting LTMS alternatives each reflect a combination of varying volumes of dredged material placement in three kinds of sites/environments: in-Bay, ocean, and upland/wetland reuse. In addition, a variety of "policy-level mitigation measures" would be applied in common to all of the alternatives. These steps are summarized below. The alternatives screening and development process is described in detail in Chapter 5.

### 1.6.1 Screening of Preliminary Alternatives

In addition to the No-Action alternative, five preliminary action alternatives were initially considered (see section 5.3.3 for a description of these alternatives). Based upon the results of the "generic impacts analysis" (see section 6.1), any preliminary alternative that includes a "high" overall placement volume in any one environment is eliminated from further consideration for several reasons. First, a high disposal volume in any one environment has the potential to cause substantial adverse environmental impacts. Second, high disposal volumes in either the in-Bay or ocean environments, where the dredged material is managed as a waste instead of a reusable resource, would make unachievable the LTMS goal for environmental enhancement through beneficial reuse of dredged material. Third, over-reliance on one form of disposal is unwise from both an economic and management standpoint. If a variety of sites is available, then unforeseen circumstances that may limit the available capacity in one disposal environment would be less likely to cause a serious disruption of dredging activity. Without a variety of sites available, many dredging projects could be delayed until new sites could be developed. This could result in significant navigational problems and, ultimately, in disruptions in the flow of commerce and impacts to the regional economy. In short, a variety of dredged material placement options is important insurance against a return to "mudlock" in the San Francisco Bay Area.

An exception to the complete elimination of high volumes in any placement environment is the No-Action alternative. No-Action, representing current conditions, includes high volumes of disposal at existing in-Bay sites. The No-Action alternative must

be retained under both NEPA and CEQA for comparison with the final "action" alternatives.

### 1.6.2 Policy-Level Mitigation Measures

The resources that may be affected by dredged material disposal in each of the three environments are protected by a number of existing regulations and agency policies, as well as new "policy-level mitigation measures" developed for this EIS/EIR. The LTMS agencies are taking or will take a number of steps to ensure that potentially significant environmental impacts will not occur as a result of dredged material management, regardless of which alternative is selected as the preferred approach.

The policy-level mitigation measures contained in this EIS/EIR differ from project-specific mitigation measures in two important ways. First, they address potential adverse impacts on a broad regional and cumulative level. In this regard, they help direct how and when site-specific measures are needed to avoid or mitigate potential impacts, but they do not replace the need for site-specific mitigation measures. Second, the policy-level measures included in this EIS/EIR effectively reduce the number of resources and pathways that could theoretically be of concern so that the subsequent alternatives analysis focuses on those resources that are reasonably affected by dredged material management activities.

There are three basic categories of policy-level mitigation measures: (1) measures that apply to disposal and reuse in general; (2) measures that apply in specific placement environments; and (3) measures that apply to specific types of projects or facilities. Specific measures included in each category are discussed in section 5.1 and summarized below. An additional set of specific policy-level mitigation measures was identified as a result of the evaluation of potential impacts of the alternatives. These additional measures are presented in section 6.3, and are also summarized below.

Many of the policy-level mitigation measures discussed in chapters 5 and 6 and summarized below are restatements of existing federal and/or state requirements and policies. However, the inclusion and coordination of these measures as part of a comprehensive federal-state Management Plan represents an important evolution in dredged material management. In some cases, specific measures may exceed the minimum requirements of a particular regulation or an individual agency's policies; but

together they are necessary to ensure that, for the region as a whole and across all placement environments, overall environmental impacts can be minimized and environmental benefits can be maximized in an economically prudent manner.

### Mitigation Measures that Generally Apply to Dredged Material Disposal and Reuse

#### MATERIAL SUITABILITY AND SEDIMENT QUALITY TESTING

- *The LTMS agencies will evaluate proposals for new dredged material placement or disposal sites, consistent with alternatives analysis requirements of state and federal laws (e.g., CEQA, NEPA, and the Clean Water Act).*
- *For any particular site, the LTMS agencies will address all of the relevant contaminant exposure pathways of concern (as described in Chapter 3 of this EIS/EIR and in other agency guidance documents as appropriate) as part of the environmental assessment.*
- *The LTMS agencies will include specific conditions in authorizations for dredged material disposal or reuse sites that stipulate appropriate design or operational features necessary to control all contaminant pathways identified as being of concern at a given site. Control measures will be adequate to manage the worst-case material that would be considered for placement at a specific site.*
- *Only dredged material determined by the LTMS agencies to be suitable for the proposed placement or disposal option will be authorized for such placement or disposal. The LTMS agencies will require that sediments are adequately characterized for the proposed placement environment or specific disposal site, using appropriate physical, chemical, and biological testing methods, as necessary. Sediment quality evaluations will include consideration of potential effects related to the specific pathways of concern identified for the proposed placement environment or disposal site.*

#### SITE MANAGEMENT AND MONITORING

- *The LTMS agencies will develop and implement site management and monitoring plans for all multi-user placement or disposal sites.<sup>1</sup> These plans will specify the site use parameters necessary to ensure that impacts are minimized and/or benefits are realized. The plans will also specify the monitoring requirements and post-closure activities as appropriate for each site. Site management and monitoring plans will identify specific conditions that would constitute acceptable site performance, as well as adjustments to site use parameters (including termination of continued site use) that would be triggered by specific findings of non-performance.*
- *The LTMS agencies will provide opportunity for public input and comment on proposed site management and monitoring plans for new disposal or placement sites, and on proposed substantive revisions to existing plans. Information from site monitoring efforts will be made available to the public, and opportunity for comment will also be provided as part of the periodic review for existing sites.*

#### REVIEWING THE NEED FOR DREDGING

- *The COE, in consultation with the other LTMS agencies, will confirm or revise the Dredged Material Management plans for existing federal maintenance dredging projects in San Francisco Bay, and perform NEPA reviews as needed including supplementing the Composite EIS for Maintenance Dredging. These reviews will include consideration of channel widths, depths, and configurations in terms of potential changes that could reduce the volume of dredging necessary to meet the navigational needs of each project.*
- *BCDC, in consultation with the other LTMS agencies, will continue to work with area ports within the framework of its joint Seaport planning*

<sup>1</sup> The development of individual Site Management and Monitoring Plans for single-user placement and disposal sites, such as the Suisun Bay and San Francisco Bar sites, is not necessary because the project environmental and management documents for single-user sites include such management and monitoring plan development requirements.

process within the Metropolitan Transportation Commission to identify potential means to reduce the need for dredging while meeting the navigational needs of each port facility. In addition, the LTMS agencies will continue to work to reduce the need for dredging associated with other projects.

#### COORDINATED DREDGED MATERIAL MANAGEMENT

- The COE, EPA, SFBWQCB, and BCDC, together with the State Lands Commission, are formally cooperating in an interagency Dredged Material Management Office (DMMO), to coordinate regulatory requirements and to provide better service to the dredging community and the public. The DMMO was established as a pilot program by the Memorandum of Agreement (MOA), signed by the participating agencies. The DMMO will likely continue to review and coordinate on proposed dredging projects in accordance with the comprehensive LTMS Management Plan developed to implement the preferred alternative management approach selected in the LTMS Policy EIS/Programmatic EIR.

#### SMALL DREDGER SET-ASIDE

- 250,000 cy of the in-Bay disposal capacity under the disposal cap will be reserved each year for small dredgers. This small dredger set-aside volume will not be decreased over time. Further, small dredgers will be allowed to exceed the 250,000 cy set-aside in any given year, on a case-by-case basis. Small dredgers will still be required, on a case-by-case basis, to evaluate and implement UWR or ocean disposal if feasible and practicable.

#### Mitigation Measures that Apply in Specific Environments

##### UPLAND HABITAT CONVERSION ASSOCIATED WITH RESTORATION PROJECTS

- The LTMS agencies will encourage, and authorize as legally appropriate, habitat enhancement and restoration efforts using dredged material that are designed to be consistent, to the maximum extent practicable, with specific habitat goals established by regional planning efforts for managing the region's natural resources. Implementation of projects in this manner will ensure that such reuse

efforts will reflect the regional goals for restoration, thereby maximizing the environmental benefits of such projects for the region.

- The LTMS agencies will also encourage, and authorize as legally appropriate, independent habitat restoration projects using dredged material (in areas not covered by established habitat goals) when they would clearly result in an overall net gain in habitat quality, and would minimize loss of existing habitat functions. Whenever feasible, such projects will provide, as part of the project design, for a no net loss in the habitat functions existing on the project site or, where necessary, provide compensatory mitigation for lost habitat functions in accordance with state and federal mitigation requirements.

#### HABITAT PROTECTION

- Dredging activities will be restricted as indicated on Table 5.1-1. Any dredging projects proposing deviations from these tables will not be approved by the LTMS agencies unless, through the Section 7 consultation process, project sponsors obtain project-specific concurrence from the appropriate resource agencies.
- Dredged material disposal activities will be minimized or restricted as indicated on Table 5.1-2. The LTMS agencies will closely review disposal projects proposed for the designated in-Bay disposal sites to ensure that disposal during the indicated time frames is minimized or avoided as indicated. Disposal project proponents are advised that the agencies will require that the need for disposal at these sites during the specified time frames must be clearly established. Any disposal projects or new disposal sites proposing deviations from these tables will not be approved by the LTMS agencies unless, through the Section 7 consultation process, project sponsors obtain project-specific concurrence from the appropriate resource agencies.

#### Mitigation Measures Applicable to Specific Types of Projects or Facilities

##### REHANDLING FACILITIES AND DEDICATED CONFINED DISPOSAL FACILITIES

- The LTMS agencies will address, as appropriate, the issues identified in Table 5.1-3 in site-specific assessments of the development, expansion, or

*operation of dredged material rehandling facilities or dedicated confined disposal sites.*

#### WETLAND RESTORATION

- *The LTMS agencies will address, as appropriate, all of the issues identified in Table 5.1-4 in site-specific assessments of proposed wetland restoration projects using dredged material.*

#### CONFINED AQUATIC DISPOSAL (CAD)

- *The LTMS agencies will address, as appropriate, the issues identified in Table 5.1-5 during site-specific assessments of proposed CAD sites for NUAD-class dredged material.*

#### LEEVE REUSE

- *The LTMS agencies will address, as appropriate, all of the issues identified in Table 5.1-6 in site-specific assessments of proposed levee maintenance, stabilization, or construction projects using dredged material.*
- *To address water quality concerns associated with the reuse of dredged material for levee repair and stabilization in the Delta region, only material determined to be suitable in regard to pollutant and salinity concentrations, as well as material which has been processed to reduce pollutants and salinity to suitable concentrations, will be used for this purpose. This may involve such control measures as directing only material dredged from the eastern portion of San Francisco Bay, where sediment salinity concentrations are lowest, for reuse purposes in the Delta region.*

#### Additional Policies Identified as Needed Based on Evaluation of Potential Impacts

##### SPECIAL CONSIDERATION FOR “SMALL DREDGER” PROJECTS

- *The LTMS agencies will give special consideration in the LTMS Management Plan to minimizing potential economic impacts to “small dredger” projects, for example, by reserving some of the available capacity at the least expensive disposal or reuse sites or by other means. The specific approach/policy for minimizing economic impacts to small dredgers*

*will be established with public input as the LTMS Management Plan is developed, and will be incorporated as appropriate under the overall Management Plan in the specific Site Management and Monitoring Plan(s) for the in-Bay sites.*

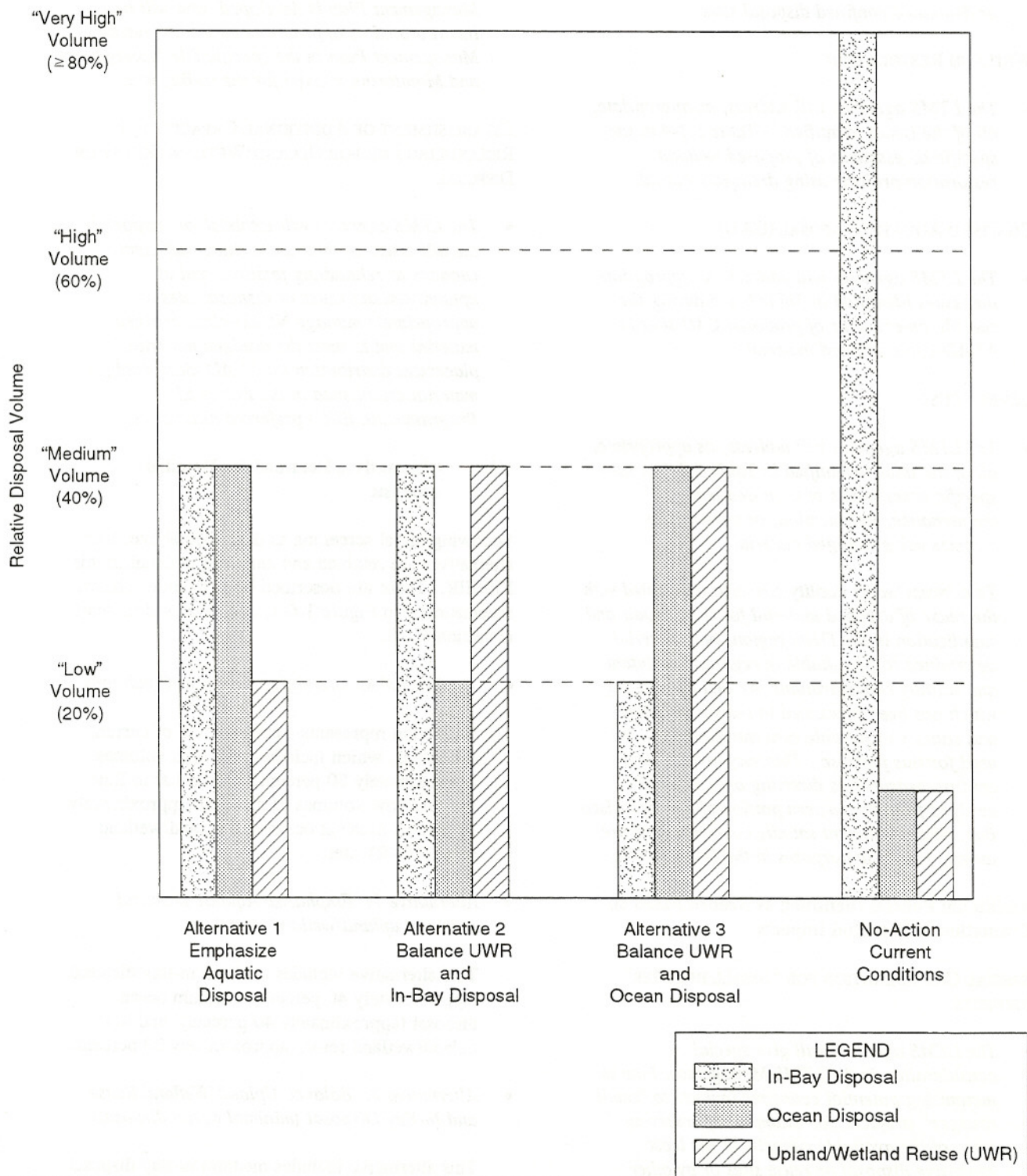
#### ESTABLISHMENT OF ADDITIONAL CAPACITY FOR REHANDLING AND FOR UPLAND/WETLAND REUSE OR DISPOSAL

- *The LTMS agencies will establish or support, to the full extent of their authorities, sufficient capacity at rehandling facilities and at upland/wetland reuse or disposal sites to appropriately manage NUAD-class dredged material and to meet the dredged material placement distribution for SUAD-class dredged material established in the Policy EIS/Programmatic EIR’s preferred alternative.*

#### 1.6.3 Alternatives Retained for Detailed Analysis

Following initial screening as described above, four alternatives are retained and analyzed in detail in this EIS/EIR. These are described briefly below, shown schematically in Figure 1.6-1, and discussed in depth in section 6.1.8.

- *The No-Action Alternative: Current Conditions*  
No-Action represents a continuation of current conditions, which includes very high volumes (approximately 80 percent) disposed at in-Bay sites and low volumes of disposal (approximately 10 percent each) at ocean and upland/wetland reuse (UWR) sites.
- *Alternative 1: Emphasize Aquatic Disposal (minimal upland/wetland reuse)*  
This alternative includes medium in-Bay disposal (approximately 40 percent), medium ocean disposal (approximately 40 percent), and low upland/wetland reuse (approximately 20 percent).
- *Alternative 2: Balance Upland/Wetland Reuse and In-Bay Disposal (minimal ocean disposal)*  
This alternative includes medium in-Bay disposal (approximately 40 percent), low ocean disposal (approximately 20 percent), and medium upland/wetland reuse (approximately 40 percent).



**Figure 1.6-1. Relative Sediment Volumes Destined for Each Type of Placement Environment under the Various LTMS Alternatives**

- *Alternative 3: Balance Upland/Wetland Reuse and Ocean Disposal (minimal in-Bay disposal)*

This alternative includes low in-Bay disposal (approximately 20 percent), medium ocean disposal (approximately 40 percent), and medium upland/wetland reuse (approximately 40 percent).

The final “action” alternatives each provide for a diversity of dredged material placement sites, and they each would provide a degree of beneficial reuse. They differ in terms of the relative emphasis on each placement environment, the potential impacts and benefits to different resources, and the potential costs to different sectors of the dredging-related economy. Together, these final “action” alternatives address the full range of distributions that are possible using combinations of medium and low volumes among the three placement environments. Each of the action alternatives has a reasonable expectation of being implementable in the San Francisco Bay Area (although they differ in the degree to which they can be implemented immediately). Each of them also includes all of the common “policy-level mitigation measures” described in section 1.6.2 and Chapter 5 that mitigate or obviate many of the adverse effects that could otherwise theoretically occur.

## 1.7 COMPARISON OF ALTERNATIVES

The potential impacts and benefits of the four LTMS alternatives are summarized below and evaluated in detail in Chapter 6.

### 1.7.1 Evaluation Criteria for the EIS/EIR Alternatives

The issues of concern from the scoping process (see section 1.4) were used to develop evaluation criteria for comparing the alternative management approaches considered in this EIS/EIR. The first issue — the need for adequate disposal capacity — is not directly used as an evaluation criterion because it is already captured in the Purpose for Action (section 2.4.1). The alternatives will not differ in their ability to address this issue, because only alternatives that can satisfy this fundamental need will be considered in detail in this EIS/EIR. Similarly, the fifth issue — the need to identify appropriate funding policies to facilitate the goals of the LTMS — is not used as an evaluation criterion because overall funding mechanisms will not be selected directly in this EIS/EIR. The remaining three significant scoping

concerns are directly incorporated into the EIS/EIR evaluation criteria, as follows.

- *Evaluation Criterion A: Potential Risks and Benefits to Ecological Systems*

This criterion is used to compare the alternatives in terms of the degree to which they present potential environmental impacts or risks, and the degree to which they offer environmental benefits, in the in-Bay, ocean, and upland/wetland placement environments. The issues of concern addressed under this criterion include the need to ensure appropriate environmental protection and to facilitate beneficial reuse of dredged material.

Each of the action alternatives can be implemented without significant adverse impacts to the environment. However, the three alternatives differ from each other, and from No-Action, in terms of (1) the degree to which benefits may be realized from reuse of dredged material as a resource; (2) the degree to which existing habitat values may be lost or converted to other habitat types as a result of upland or wetland reuse, or development of rehandling or confined disposal facilities; and (3) the degree to which risks to the already-stressed Estuary system may be reduced by reducing disposal at the dispersive in-Bay sites. The degree of actual adverse impacts to Estuary resources that is associated with current volumes of in-Bay dredged material disposal is impossible to accurately quantify with existing scientific information. This EIS/EIR therefore generally evaluates the alternatives in terms of the relative risk of adverse impacts occurring.

- *Evaluation Criterion B: Regulatory Certainty*

This criterion reflects the need to improve coordination and integration of agency policies governing the management of dredged material. Under this criterion the alternatives are compared in terms of the degree to which, in conjunction with the policy-level mitigation measures common to all alternatives (see section 5.1.1), they would support an understandable, consistent regulatory framework that provides reasonable predictability for dredging project proponents while assuring the public that significant environmental impacts are avoided. (See section 4.8 for a description of the existing regulatory environment.)

Each of the “action” alternatives evaluated in this EIS/EIR would result in improved regulatory certainty for both dredging interests and the public. The amount of improvement in regulatory certainty varies somewhat with the alternatives. However, the major factor controlling the degree of regulatory certainty that can be achieved under any of the action alternatives is the degree to which any alternative can actually be implemented. It is anticipated that any of the action alternatives would transition over time toward full implementation of its distribution goals as upland or wetland reuse or disposal sites, or rehandling facilities, become available. All of the action alternatives would increase regulatory certainty in the long run, compared to No-Action.

- *Evaluation Criterion C: Effects on Dredging Related Economic Sectors*

This criterion is used to compare the alternatives in terms of their potential regional effects on the socioeconomic sectors of the Bay Area economy that are most directly associated with dredging and navigation. The different dredging-related sectors have different abilities to absorb or pass along any potential increases in the overall costs associated with dredged material management, and the alternatives differ in the degree to which each sector could be affected.

This evaluation explores the direct costs associated with the LTMS alternatives and their potential effects on the socioeconomic environment of the LTMS planning region. The cost figures are planning-level estimates that are used to compare the relative dredging and disposal costs of the four alternatives. These planning-level estimates use many simplifying assumptions and do not specifically reflect the range of dredging and disposal costs that may be encountered by all projects or project sponsors, but the planning-level estimates are considered to be conservative. Section 6.2.3 presents a detailed explanation of the scope of the economic analysis, how costs were estimated, and a discussion of potential economic effects on major dredgers vs. small dredgers.

The potential impacts and benefits of the four alternatives are summarized below according to these broad evaluation criteria.

## 1.7.2 No-Action (Current Conditions)

No-Action is characterized by very high levels of in-Bay disposal (approximately 80 percent), and low levels of ocean disposal and upland or wetland reuse (approximately 10 percent each).

### Risks and Benefits to Ecological Systems (Evaluation Criterion A)

The least degree of potential environmental benefits of any alternative would occur under No-Action, because the lowest volumes of dredged material would go to beneficial reuse. The majority of all material dredged throughout the Estuary would be disposed as a waste at existing in-Bay sites. Reuse projects that are constructed would continue to occur on an opportunistic, case-by-case basis and would tend to be associated mainly with large, new work projects. Since multi-user beneficial reuse sites would not exist, the smallest number of beneficial reuse projects would be expected under this alternative. Therefore, no benefit to ecological systems is expected under No-Action.

Potential environmental risks and impacts to the in-Bay placement environment are greater under No-Action than under any of the action alternatives. This is because, on average, approximately twice as much dredged material would be disposed at the existing, dispersive in-Bay sites under this alternative than under Alternatives 1 or 2, and four times as much as under Alternative 3. The potential adverse impacts of in-Bay disposal are related primarily to the occurrence of high-frequency disposal activities occurring at the disposal sites. High levels of in-Bay disposal would mean that high-frequency disposal could occur relatively often. No-Action carries a moderate risk of cumulative impacts to water quality and to fish and wildlife habitat quality, and a low risk of causing adverse effects to some special status species. At the same time, the risks and impacts to the ocean and upland/wetland reuse environments would be as low as the lowest of the action alternatives for each of these environments (Alternative 2 for the ocean, and Alternative 1 for upland/wetland reuse).

### Regulatory Certainty (Evaluation Criterion B)

The current conditions represented by the No-Action alternative already include a variety of significant improvements in regulatory certainty over the pre-LTMS dredged material management situation, including the following: improved in-Bay sediment

quality testing guidelines; more active management of the Alcatraz disposal site to minimize continued physical mounding problems; and formal designation by EPA of the San Francisco Deep Ocean Disposal Site. In addition, demonstration projects on the beneficial reuse of dredged material for levee maintenance (Jersey Island project) and for tidal wetlands restoration (Sonoma Baylands project) have provided valuable experience in how to design these kinds of projects to ensure their success. Finally, successful reuse of both SUAD- and NUAD-class dredged material has been ongoing at certain area landfills, demonstrating that this approach can be practical in this area. However, current regulatory conditions are still fairly “uncertain” and unpredictable, both for dredging interests and the public. Overall, the No-Action alternative would provide the lowest degree of regulatory certainty of any of the alternatives, in both the short term and over the 50-year LTMS planning period.

#### **Effects on Dredging-Related Economic Sectors (Evaluation Criterion C)**

Under No-Action conditions, cumulative costs of dredging and disposal over the 50-year planning period are estimated to range from approximately \$1.3 billion to \$2.4 billion, which is an average of approximately \$26 million to \$46 million per year (Table 6.2-7). These costs represent 0.3 to 0.6 percent of the overall \$7.5 billion per year dredging-related maritime economy in the Bay Area (in 1990 dollars).

##### **1.7.3 Alternative 1 (Emphasize Aquatic Disposal)**

Alternative 1 includes medium levels of disposal at the existing in-Bay and ocean sites (approximately 40 percent at each), and only low placement volumes (approximately 20 percent) at upland or wetland reuse sites. This alternative thus emphasizes aquatic disposal overall: 80 percent of all SUAD material, equally divided between sites in the Estuary and in the ocean, would be disposed at aquatic sites without realizing the potential for regional environmental benefits.

#### **Risks and Benefits to Ecological Systems (Evaluation Criterion A)**

Alternative 1 would have the least potential environmental benefits of any of the “action” alternatives, because only low volumes of dredged

material would go into beneficial reuse applications, including low levels of benefit to fish and wildlife habitat, and to special status species. However, greater potential environmental benefits could be achieved under this alternative than under No-Action because coordinated, interagency effort would be expected to result in at least some new multi-user reuse sites being developed. Alternative 1 would also benefit the in-Bay environment to a degree, by reducing the overall volume of dredged material being disposed at dispersive in-Bay sites. Even though Alternative 1 includes the greatest volume of in-Bay disposal of the action alternatives, this still represents reducing No-Action volumes by approximately one-half, as a long-term average.

Alternative 1 (and Alternative 2) would have the highest level of potential risk to in-Bay resources of the action alternatives, since medium volumes of dredged material would be disposed at in-Bay sites. Although there are technical uncertainties about quantifying the risks of in-Bay disposal, the potential for adverse effects appears to be related primarily to the occurrence of high-frequency disposal activities at the disposal sites. Medium levels of in-Bay disposal would mean that high-frequency disposal could still occasionally occur. Alternative 1 carries a low risk of cumulative impacts to water quality and to fish and wildlife habitat quality. However, these risks are substantially reduced relative to the No-Action alternative. Medium disposal volumes at the ocean site are not expected to result in any adverse effects outside the site. Alternative 1 would have the least risk of adverse impact in the upland/wetland reuse environment of any of the action alternatives because only low volumes of dredged material would be placed in that environment. Therefore, Alternative 1 has an overall low risk of impact to ecological systems compared to No-Action.

#### **Regulatory Certainty (Evaluation Criterion B)**

Alternative 1 would have a relatively high degree of regulatory certainty during the initial years of LTMS implementation. This is particularly true for dredging projects that are predominantly comprised of SUAD-class material. The existing aquatic disposal sites would be immediately able to handle the average annual volumes of material projected to go to them, without significant adverse environmental effects. Projects having substantial quantities of NUAD material, on the other hand, would face a degree of uncertainty in the short term, similar to that under No-Action. Until multi-user upland/wetland reuse or

confined disposal facilities could be made available, project sponsors would still be expected to identify and acquire on their own suitable disposal options for NUAD material. Alternative 1 also provides the lowest level of certainty of any of the action alternatives for members of the public concerned about enhancing overall environmental quality by reusing dredged material for beneficial purposes, rather than managing it as a waste.

### **Effects on Dredging-Related Economic Sectors (Evaluation Criterion C)**

Cumulative costs of dredging and disposal over the 50-year planning period are estimated to range from approximately \$1.6 billion to \$2.7 billion under Alternative 1, which is an average of approximately \$32 million to \$54 million per year (Table 6.2-7). These costs represent 0.4 to 0.7 percent of the overall \$7.5 billion per year dredging-related maritime economy in the Bay Area (in 1990 dollars). These costs are approximately \$6 million to \$8 million per year higher than cumulative costs estimated for No-Action conditions (an increase of approximately 17 to 23 percent).

#### **1.7.4 Alternative 2 (Balance Upland/Wetland Reuse and In-Bay Disposal)**

Alternative 2 includes medium levels of disposal at the existing in-Bay sites (approximately 40 percent), low disposal volumes in the ocean (approximately 20 percent), and medium placement volumes at upland or wetland reuse sites (approximately 40 percent). This alternative thus realizes additional environmental benefits from reuse of dredged material as a resource, but retains some risks associated with moderate volumes of disposal within the Estuary.

### **Risks and Benefits to Ecological Systems (Evaluation Criterion A)**

Alternative 2 (and Alternative 3) would have the greatest potential environmental benefits of any of the action alternatives, because the greatest volumes of dredged material would go into beneficial reuse applications. Moderate benefits to fish and wildlife habitat and to special status species, and low levels of benefit to water quality, could be achieved. Alternative 2 would also benefit the in-Bay environment to a degree, by reducing the overall volume of dredged material being disposed at dispersive in-Bay sites in comparison to No-Action. Even though Alternative 2 (and Alternative 1) includes

the greatest volumes of in-Bay disposal of the action alternatives, this still represents reducing No-Action (current condition) volumes by one-half, as a long-term average. Overall, Alternative 2 provides moderate benefits to ecological systems over No-Action.

Alternative 2 (and Alternative 1) would have the highest level of potential risk to in-Bay resources of the action alternatives, since medium volumes of dredged material would be disposed at in-Bay sites. As discussed in the “generic analysis” (see Chapter 6), the potential adverse impacts of in-Bay disposal appear to be related primarily to the occurrence of high-frequency disposal activities occurring at the disposal sites. Medium levels of in-Bay disposal would mean that high-frequency disposal could still occasionally occur. Alternative 2 (and Alternative 1) carries a low risk of cumulative impacts to water quality and to fish and wildlife habitat quality. However, these risks are substantially reduced relative to No-Action. Regarding the ocean, low volumes of disposal are not expected to result in any adverse effects outside the disposal site. Potential ocean impacts are less under this alternative than the other action alternatives, and are similar to No-Action. However, Alternative 2 would have a low risk of adverse impact in the upland/wetland/reuse environment because, at medium placement volumes, some sensitive resource areas could not be completely avoided. Overall, because this alternative has a low risk of impact in both the upland/wetland/reuse and in-Bay environments, it is assigned a moderate level of impact/risk to ecological systems.

### **Regulatory Certainty (Evaluation Criterion B)**

Regulatory certainty would be improved over No-Action. However, during the initial years of LTMS implementation this alternative would offer lower regulatory certainty than Alternative 1 since the allowable aquatic disposal volume would not always be sufficient to manage all of the SUAD material likely to be dredged. This could mean that some projects would be delayed or otherwise adversely affected. This situation would not improve until multi-user upland or wetland placement capacity could be made available. For NUAD material, dredgers would face a degree of uncertainty in the short term similar to that under No-Action. At full implementation, Alternative 2 provides the highest level of certainty that environmental enhancement will occur. However, this alternative retains a substantial level of in-Bay disposal. In this regard, regulatory

certainty for the public would be intermediate between Alternatives 1 and 3.

### **Effects on Dredging-Related Economic Sectors (Evaluation Criterion C)**

Cumulative costs of dredging and disposal over the 50-year planning period are estimated to range from approximately \$1.6 billion to \$3.05 billion under Alternative 2, which is an average of approximately \$33 million to \$61 million per year (Table 6.2-7). These costs represent 0.43 to 0.8 percent of the overall \$7.5 billion per year dredging-related maritime economy in the Bay Area (in 1990 dollars). These costs are approximately \$7 million to \$15 million per year higher than cumulative costs estimated for No-Action conditions (an increase of approximately 27 to 33 percent).

#### **1.7.5 Alternative 3 (Balance Upland/Wetland Reuse and Ocean Disposal)**

Alternative 3 includes low disposal volumes at in-Bay sites (approximately 20 percent), medium disposal volumes in the ocean, and medium volumes of upland/wetland reuse placement (approximately 40 percent each). This alternative combines the maximum environmental benefit of any of the action alternatives, with the minimum risks to the Estuary and negligible risks to the ocean.

### **Risks and Benefits to Ecological Systems (Evaluation Criterion A)**

Alternative 3 (and Alternative 2) would have the greatest potential environmental benefits of any of the action alternatives, because medium volumes of dredged material would go into beneficial reuse applications. Moderate benefits to fish and wildlife habitat and to special status species, and low levels of benefit to water quality, would also be achieved. In addition, Alternative 3 would benefit the in-Bay environment to a greater degree than the other action alternatives because the overall volume of dredged material being disposed at dispersive in-Bay sites would be reduced to the greatest extent. This would represent a very substantial reduction compared to No-Action. Overall, Alternative 3 provides moderate benefits to ecological systems over No-Action.

Alternative 3 would have the lowest level of potential risk to in-Bay resources of the action alternatives, since only low volumes of dredged material would be disposed at in-Bay sites. As discussed in the generic

analysis, the potential adverse impacts of in-Bay disposal appear to be related primarily to the occurrence of high-frequency disposal activities occurring at the disposal sites. At low levels of in-Bay disposal, high-frequency disposal activities would generally be avoidable. Alternative 3 carries only a negligible risk of cumulative impacts to water quality and to aquatic fish and wildlife habitat quality, and these low risk levels are substantially reduced relative to No-Action. Medium volumes of disposal at the ocean site are not expected to result in any adverse effects outside the disposal site. However, Alternative 3 would also have a low risk of adverse impact in the upland/wetland reuse environment because, at medium placement volumes, some sensitive resource areas could not be completely avoided. Alternative 3 has the lowest level of risk of impact compared to the other alternatives. Overall, the risk of impact to ecological systems is considered low compared to No-Action.

### **Regulatory Certainty (Evaluation Criterion B)**

Regulatory certainty would be improved over No-Action. However, during the initial years of LTMS implementation, this alternative would offer lower regulatory certainty than Alternative 1 since the allowable aquatic disposal volume would not always be sufficient to manage all of the SUAD material likely to be dredged. This could mean that some projects would be delayed or otherwise adversely affected. This situation would not improve until multi-user upland or wetland placement capacity could be made available. For NUAD material, dredgers would face a degree of uncertainty in the short term similar to that under No-Action. At full implementation, Alternative 3 provides the highest level of certainty that environmental enhancement will occur. In addition, this alternative has the lowest level of in-Bay disposal of any of the alternatives. In this regard, potential cumulative stresses on the Estuary would be reduced more than would be the case under any of the other alternatives.

### **Effects on Dredging-Related Economic Sectors (Evaluation Criterion C)**

Dredging and disposal costs under Alternative 3 would be higher than under the other alternatives because of the increased use of more-costly ocean and UWR disposal sites. Cumulative costs of dredging and disposal over the 50-year planning period are estimated to range from approximately \$1.8 billion to \$3.2 billion under Alternative 3, which is an average

of approximately \$36 million to \$65 million per year (Table 6.2-7). These costs represent 0.5 to 0.9 percent of the overall \$7.5 billion per year dredging-related maritime economy in the Bay Area (in 1990 dollars). These costs are approximately \$10 million to \$19 million per year higher than cumulative costs estimated for No-Action conditions (an increase of approximately 38 to 41 percent).

### 1.7.6 Air Quality Effects

The amount of emissions generated from an alternative varies depending on the distribution of sediments to the various placement environments. It also depends on the type of equipment used (diesel vs. electric). However, the assumptions on type of equipment are the same for all of the alternatives. The ranking of emissions at the various placement environments, from the highest to lowest, is: (1) rehandling facility, (2) levee restoration, (3) ocean site, (4) habitat restoration, and (5) in-Bay site. Alternative 3 would produce the highest emissions of all the alternatives, followed by Alternative 1, Alternative 2, then the No-Action Alternative. Subtracting dredging emissions, which is a constant for all of the alternatives, disposal emissions for Alternative 3 would be roughly double the disposal emissions that would occur from the No-Action Alternative. This is because 40 percent of the sediment proposed for disposal in Alternative 3 would occur at an ocean site, with a relatively high level of emissions per unit volume, while 70 percent of the sediment proposed for disposal in the No-Action Alternative would occur at an in-Bay site, which would produce roughly one-seventh the amount of emissions per unit volume compared to ocean disposal.

The air quality analysis in Chapter 6 identifies a variety of measures that would mitigate project-specific emissions. However, the most effective measure to minimize emissions from the LTMS program would be to dispose of sediments as close to the dredging site as possible, thereby minimizing transport distance and equipment usage from tug boats, the largest contributor to disposal-related emissions.

## 1.8 THE PREFERRED ALTERNATIVE

The LTMS agencies have chosen Alternative 3 as the preferred alternative. It is a long-term approach that emphasizes beneficial use and ocean disposal of dredged material, with limited in-Bay disposal. The

LTMS agencies believe Alternative 3 provides the best balance of the overall goals and objectives of the LTMS. It balances environmental benefits and impacts/risks, best reflects the national dredging policy, and is economically implementable in the long term. However, the management goal of emphasizing beneficial use and ocean disposal will need to be phased in over time. In particular, policy and management actions will need to be taken by respective agencies and upland/wetland reuse sites will need to be made available. The implementation section of this EIS/EIR discusses the measures that the LTMS agencies are considering to achieve the preferred placement emphasis.

## 1.9 IMPLEMENTATION

Fully implementing Alternative 3 will require several actions by the LTMS agencies to achieve an appropriate balance between minimizing environmental risk and maximizing environmental benefit in a cost-efficient manner. Several steps are within the existing authorities of the LTMS agencies, and can be implemented fairly rapidly. Other actions that could more fully achieve the placement distributions of the selected alternative are outside the agencies' current authorities. Chapter 7 outlines the immediate steps the agencies can take and discusses further steps that could be pursued to more fully implement Alternative 3. Chapter 7 also provides a description of potential financing options that could be considered in the future.

### 1.9.1 Finalizing the Policy EIS/EIR

The first step, after reviewing comments on the Final EIS/EIR, will be for the COE and EPA to sign a Record of Decision (ROD), completing the federal requirements for finalizing the EIS process and Phase III of the overall LTMS process. The state lead agency, the State Water Resources Control Board, will also certify the final document pursuant to the requirements of the California Environmental Quality Act. The LTMS agencies will adopt the selected alternative as specified in the ROD, and the policy-level mitigation measures associated with it, as the overall approach that will guide the LTMS agencies' implementation actions in Phase IV of the LTMS process.

### 1.9.2 Development of the Comprehensive LTMS Management Plan

The LTMS agencies will produce and circulate for public review a draft management plan, based on the preferred alternative as soon as possible after the Final EIS/EIR is published. The management plan is intended to implement those policies that are within the LTMS agencies current authorities. A number of potential implementation mechanisms will be considered to achieve the distribution of dredged material targeted in the EIS/EIR preferred approach, as described in Chapter 7.

The comprehensive Management Plan will contain the specific guidance that will be used by each of the LTMS agencies to make decisions about dredging management activities. For example, the Management Plan will include or reference up-to-date guidance on sediment sampling and testing, site management and monitoring parameters for all existing sites (including allowable disposal volume limits, and any restrictions on rate or timing of site use), and permit application and review procedures.

This Management Plan will replace the existing LTMS Interim Management Plan as the regional decisionmaking framework for dredged material disposal. The Management Plan will be reviewed and updated every other year or as necessary to reflect changing statutory, regulatory, scientific, or environmental conditions.

### 1.9.3 Agency-Specific Regulatory and Policy Changes

In addition to the work jointly undertaken within the LTMS as outlined above, individual agencies will take the actions listed below as appropriate after completion of the Final EIS/EIR.

- **EPA:** Designate a permanent allowable disposal volume limit for the San Francisco Deep Ocean Disposal Site.
- **BCDC:** Revise the Bay Plan and associated regulations to incorporate new policies pertaining to dredging activities; and continue to issue permits, and Coastal Zone Management consistency determinations for federal dredging projects.
- **SFBRWQCB:** Revise the Basin Plan to incorporate new dredging policies; and continue to issue Water Quality Certifications (under Section 401 of the Clean Water Act) for dredging projects.
- **COE:** Confirm or revise Dredged Material Management Plans for existing maintenance dredging projects in San Francisco Bay, and perform NEPA reviews as needed, including supplementing the 1975 Composite EIS for Maintenance Dredging, using the findings in this EIS/EIR.
- **SWRCB:** Revise statewide policies as appropriate to support the selected alternative.



## CHAPTER 2.0 INTRODUCTION

This chapter describes the objectives, organization, and structure of the Long-Term Management Strategy (LTMS) for San Francisco Bay Area dredged material; presents a brief background on the environmental concerns leading to the initiation of the LTMS; discusses the purpose and need for this Policy Environmental Impact Statement/Programmatic Environmental Impact Report (EIS/EIR) and its role in the overall LTMS process; and describes the structure of the EIS/EIR. This chapter also discusses the limitations of the EIS/EIR, the scoping process used to help identify issues of concern, and the evaluation criteria used to assess the alternatives.

### BACKGROUND

The San Francisco Bay/Delta Estuary (the Estuary) is one of the critical maritime thoroughfares in the nation, supporting international trade, commercial and recreational fishing, and recreation. For over a century navigational channels through the Estuary have been created, deepened, and maintained by dredging (the removal of sediments from the bottom) to enable ships to navigate safely into and out of ports, harbors, and marinas without running aground. Today's large commercial ships require deeper channels than ever before, and prospects are for even larger ships in the future. Dredging the region's channels, ports and associated docking, berthing and other facilities will continue to be necessary to maintain adequate depths for vessels to maneuver. Tables 2-1 and 2-2 excerpted from the Seaport Plan (BCDC and MTC 1996) indicate the growing amount of imported cargo and vessel calls in the region.

the Estuary where it mixes with the saline waters of the Pacific Ocean. Estuarine conditions support the most productive kinds of ecosystems in the world. However, estuaries have also been among the environmental systems most degraded by human activities, and the Estuary is no exception. The past century of intensive human settlement and development in the Bay Area has severely stressed the Estuary, and brought fundamental changes to the ecosystem. Chief among the causes of significant adverse impacts are extensive habitat loss from diking and filling of baylands and wetlands to create farming and industrial land (over 90 percent of the area's historic salt and brackish marshes have been destroyed); huge diversions of fresh water from the Estuary to Central Valley farms, and to cities as far away as southern California (up to 75 percent of the flow of the Sacramento River is diverted before it reaches the Estuary); and pollution from nonpoint and point-source discharges. Compared to these large-scale perturbations, changes associated with dredging and dredged material disposal are much less significant. However, even minor additional impacts to an already stressed ecosystem can be cause for concern, and dredging and disposal are activities that are often very visible to the public. The public has expressed concerns about the potential for both direct and cumulative effects of these activities on the already-stressed resources of the Estuary, and has sought assurance that dredging and disposal are being properly managed with the health of the overall Estuary in mind.

In recent years, concerted efforts have started to reverse some of the negative impacts of human actions

**Table 2-1. 1988 Baseline Imported Cargo Forecast (1,000s of metric tonnes)**

	1990	1995	2000	2005	2010	2015	2020
Container	7,773	11,191	14,334	18,282	22,227	26,956	32,567
Break Bulk	291	395	498	630	770	939	1,146
Neo-Bulk	1,136	1,204	1,290	1,498	1,718	1,959	2,217
Dry Bulk	2,414	3,148	3,677	4,206	4,727	5,330	6,902
Liquid Bulk	522	609	654	725	800	886	983
<b>Total</b>	<b>12,136</b>	<b>16,547</b>	<b>20,453</b>	<b>25,341</b>	<b>30,242</b>	<b>36,070</b>	<b>43,815</b>

At the same time, the San Francisco Bay/Delta system is the largest and most significant estuary along the entire west coast of North and South America. Over 40 percent of the land area of the state of California — with 60 percent of the state's runoff — drains into

on the Estuary. For example, substantial progress has been made over the last two decades in regulating point-source industrial and municipal discharges so that, for many pollutants, loading from these sources today is less than 10 percent of what it was just 20

### Findings from the Seaport Plan (BCDC and MTC 1996)

The baseline forecast indicates that total waterborne cargo for the San Francisco Bay Area will more than triple by the year 2020. Cargo in containers, neo-bulk (automobiles and scrap steel), break bulk, dry bulk, and liquid bulk cargoes are all expected to increase, with container cargo volume nearly tripling by the year 2020.

The baseline forecast predicts growth in liquid cargoes, such as vegetable oils. Other liquid bulk commodities are primarily handled at proprietary terminals (such as Chevron's Long Wharf at Richmond), and are not included in the Plan. This Plan focuses on general cargo ports and terminals.

The ports of the Bay Area compete with each other and with other West Coast ports for cargo and the ocean carriers that transport this cargo.

Bulk cargoes have traditionally been a large part of the region's cargo activity; however, there are indications that a technological shift has occurred in the way that break bulk, and possibly other bulk cargoes, are transported, with more kinds of goods being transported in containers, rather than the traditional RO/RO mode. The shift to container shipping of goods will likely increase in the future. Recycling of materials, such as steel scrap and cement, has increased because of state laws requiring local governments to reduce the volume of materials going to landfills, and because of growth in the overseas market for scrap iron and steel. Scrap metal exports are growing at Schnitzer Steel, the Port of Redwood City, and the Port of Richmond.

Significant shifts in the method of transporting forecast cargoes could affect the region's need for bulk terminals to handle forecast cargo volumes. Because of these changes, future needs for bulk terminals and berths may be reduced, thus reducing the need for the number of bulk terminals and berths designated in the Seaport Plan to meet the 2020 cargo forecasts.

Monitoring of the container and bulk cargo volumes is needed to provide a basis for ongoing review of the Seaport Plan findings and policies concerning container and bulk cargo marine terminal designations. Data collected through the monitoring process would be used to evaluate requests to convert bulk terminals to container terminals, or to delete bulk or container terminals from the Seaport Plan. Ongoing cargo monitoring would eliminate the need for updating the cargo forecast every 5 years, and would inform the Committee of emerging trends in bulk and container shipping. Collecting annual data on ship calls, tonnage, berth usage, and numbers of containers moved through the Bay Area's ports will provide the information needed for the Committee to update the Seaport Plan on an as-needed basis, and would indicate if and when a new forecast should be made.

Table 2-2. Vessel Calls per Year

Port Name	1988	1989	1990	1991	1992	1993
Port of Oakland	1,457	1,369	1,346	1,407	1,422	1,466
Port of San Francisco	654	628	609	602	523	443
Port of Richmond	204	217	242	212	161	129
Port of Benicia	215	231	251	255	255	226
Port of Redwood City	10	14	14	13	25	19
Encinal Terminals	57	37	44	11	16	16
<b>Total Bay Area</b>	<b>2,597</b>	<b>2,495</b>	<b>2,506</b>	<b>2,500</b>	<b>2,402</b>	<b>2,299</b>

years ago (SFEP 1992b). Similarly, the rate of filling of remaining Estuary wetland habitats and baylands has slowed dramatically in recent years. In 1994, an historic accord was reached on Delta water quality, diversion limits, and non-flow habitat restoration (Landmark Accord on Bay/Delta Protection 1995), to better balance the irrigation and drinking water demands of farms and cities with the fresh water flow and habitat needs of the Estuary. In addition, the Estuary Project (described later in this chapter) completed a Comprehensive Conservation and Management Plan (CCMP) for the Estuary that was signed by both the state and federal governments in 1993 (SFEP 1994). The CCMP contained a range of action items to address specific environmental problems facing the Estuary, including dredging and waterway modification. Development of a Long-Term Management Strategy (LTMS) for San Francisco Bay Area dredged material was one aspect of maintaining and improving the environmental quality of the Estuary called for in the CCMP. The following sections describe the San Francisco LTMS process, its organization, and its goals.

## 2.1 THE SAN FRANCISCO LONG-TERM MANAGEMENT STRATEGY

The LTMS for San Francisco Bay Area dredged material was established to create a partnership among agencies, navigation interests, fishing interests, environmental organizations, and the public to find acceptable disposal alternatives and to address the various regional concerns regarding dredging and disposal of dredged material. The LTMS seeks to develop a technically feasible, environmentally suitable, and economically prudent long-range approach to meeting the San Francisco Bay region's dredging and disposal needs over the next 50 years. The effort is led by two federal and three state agencies that have the primary responsibility and authority to regulate dredging and dredged material disposal in the Bay Area. These agencies are:

- *U.S. Army Corps of Engineers (COE)*. For over a century the COE has had the responsibility of maintaining the navigability of the region's and nation's waterways. The COE constructs new congressionally authorized navigation projects, conducts maintenance dredging of existing federal channels, and issues permits for private dredging activities.
- *U.S. Environmental Protection Agency (EPA)*. EPA has regulatory oversight authority over disposal activities to ensure that disposal does not result in significant adverse effects on marine and estuarine resources. EPA establishes the environmental criteria and guidelines that dredging projects conducted or permitted by the COE must meet, and EPA reviews all proposed projects based on these criteria and guidelines.
- *San Francisco Bay Conservation and Development Commission (BCDC)*. BCDC is responsible for protecting the Bay from unnecessary filling (including fill from dredged material disposal) and for encouraging environmentally and economically sound uses of the Bay. BCDC issues permits for most dredging and disposal activities in the Bay.
- *San Francisco Bay Regional Water Quality Control Board (SFBRWQCB)*. SFBRWQCB is responsible for protecting the quality and beneficial uses of the Bay's water. Dredging and disposal projects must be certified by SFBRWQCB as not violating water quality objectives. SFBRWQCB also conducts or oversees various environmental monitoring programs that are relevant to dredged material management.
- *State Water Resources Control Board (SWRCB)*. SWRCB establishes the state's water quality objectives, and oversees the Regional Water Quality Control Boards throughout the state.

Since 1990, the LTMS agencies have been working to develop a comprehensive approach for management of the Bay Area's dredging activities over the next 50 years. Additional information about the laws and policies administered by each of the LTMS agencies and other agencies involved in dredged material issues is provided in section 4.8 (Regulatory Framework).

### 2.1.1 LTMS Organizational Structure

The LTMS organizational structure, shown in Figure 2.1-1, is designed to facilitate maximum public input and policy discussion. Broad public input is gained via the Policy Review Committee, composed of interested parties and other agencies, which meets quarterly to review the work and progress of the LTMS. Technical committees or "workgroups" form the foundation of LTMS and are charged with addressing technical issues associated with in-Bay, ocean, and upland or wetland reuse and disposal. While the workgroups are directed by LTMS agency staff, representatives from the environmental, business, ports, and fishermen communities make up the majority of the workgroup participants.

A Management Committee, comprised of management executives from the five lead LTMS agencies, oversees the technical workgroups and considers input from the Policy Review Committee. A Technical Review Panel of independent experts also meets to review selected LTMS studies and reports, and provides comments to the Management Committee. The Management Committee, in turn, takes direction from the Executive Committee which consists of the chairpersons of the SFBRWQCB and BCDC, the EPA Regional Administrator, the State Dredging Coordinator, and the Commander of the South Pacific Division of the COE.

Under the LTMS management structure, EPA was given the lead responsibility to identify and designate a new ocean disposal site. BCDC was the lead agency for evaluating upland disposal alternatives and beneficial reuse of dredged material. As the lead on in-Bay disposal issues, the SFBRWQCB examined existing and new in-Bay disposal sites. The COE was assigned responsibility for coordination and management of the overall LTMS effort.

Public and agency participants in the LTMS workgroups and committees are listed in Appendix A.

### 2.1.2 Overall Goals and Objectives of the LTMS

The formal goals of the LTMS, adopted by the Executive Committee on June 7, 1991, are as follows:

- Maintain in an economically and environmentally sound manner those channels necessary for navigation in San Francisco Bay and Estuary and eliminate unnecessary dredging activities in the Bay and Estuary;
- Conduct dredged material disposal in the most environmentally sound manner;
- Maximize the use of dredged material as a resource; and
- Establish a cooperative permitting framework for dredging and dredged material disposal applications.

To achieve these goals, the participating agencies have also formally adopted the following objectives for the San Francisco LTMS process:

- Coordinate the efforts of responsible agencies regarding dredging activities in San Francisco Bay and Estuary, including activities to reduce contaminant flow into sediments.
- Identify an array of acceptable sites for disposal of material dredged from the Estuary. Sites shall be selected from a prioritized list developed on the basis of agreed-upon criteria. The site selection process shall be based on adequate scientific studies, strategies that reduce adverse impacts and increase benefits, and environmental analysis.
- Promote the reuse of dredged materials whenever it is shown that there is a need for the material and the placement can be done in an environmentally acceptable manner.
- Describe federal, state, and local authorities, criteria, policies, and protocols for dredging and the disposal of dredged materials.

### 2.1.3 Phases of the LTMS

Conceptually, an overall LTMS process is divided into five sequential phases, each of which leads to decisionmaking before continuing to the next phase

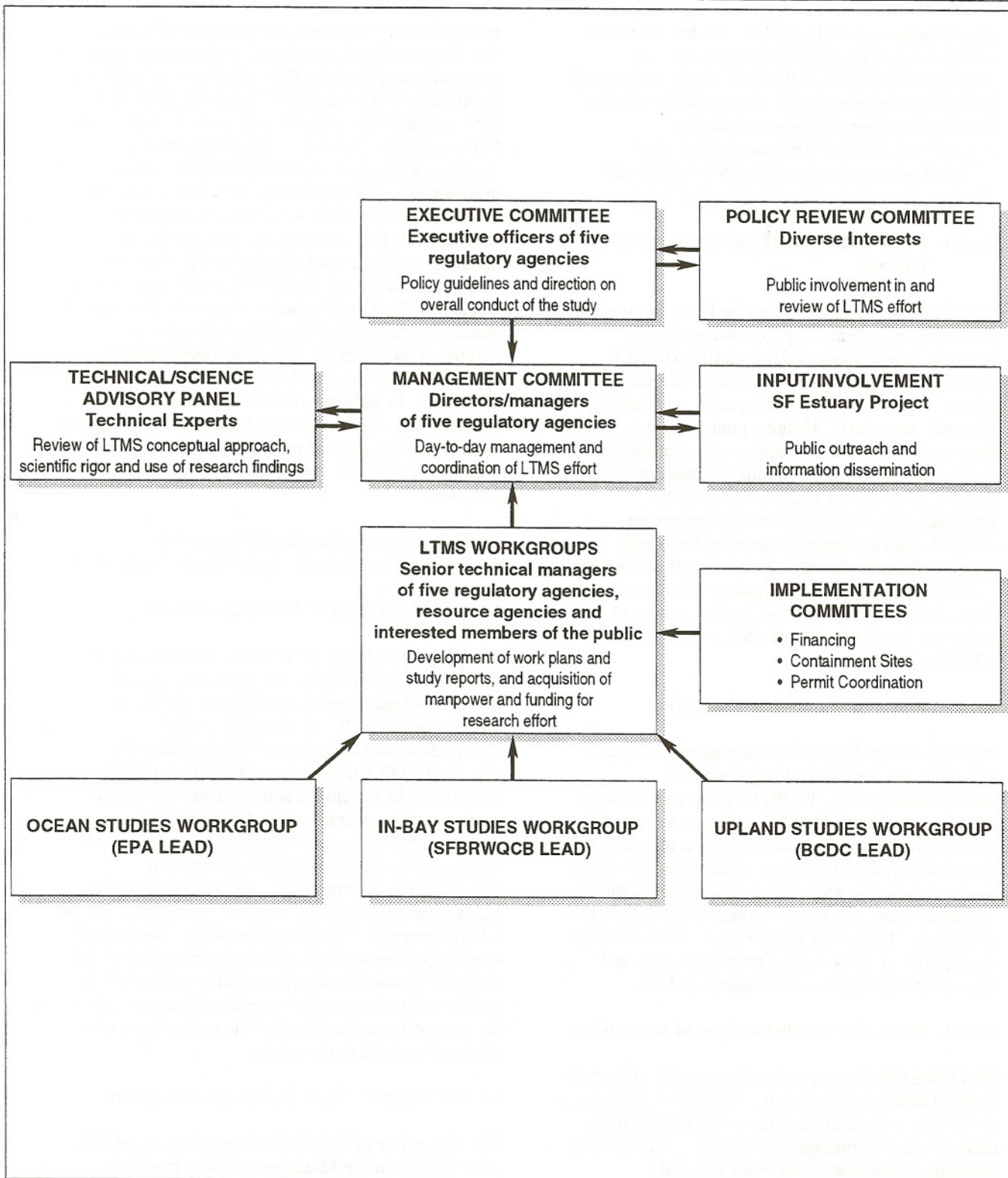


Figure 2.1-1. LTMS Organizational Structure

(Francingues and Mathis 1989). The San Francisco LTMS is following this phased approach. The individual phases of LTMS development, as described in the following paragraphs, are as follows: Evaluate Existing Management Options; Formulate Alternatives; Detailed Analysis of Alternatives; LTMS; Implementation; and Periodic Review and Update. Each phase is briefly described below.

#### **2.1.3.1 Phase I: Evaluate Existing Management Options**

The LTMS agencies completed the Phase I evaluation of existing management options and needs, and published the findings of this evaluation (USACE 1990b). The Phase I report concluded that there was clearly a shortfall in disposal capacity, especially for planned “new work” dredging projects; that no multi-user capacity existed for disposal of contaminated dredged material; that environmental concerns about the practice of in-Bay disposal needed to be addressed; and that beneficial reuse options for dredged material should be considered as a high priority wherever feasible. As a result of the Phase I evaluation, the decision was made to move on to Phase II of the LTMS process, and the goals and objectives listed above for the San Francisco region LTMS were adopted.

#### **2.1.3.2 Phase II: Formulate Alternatives**

The objective of Phase II is to formulate and identify a list of viable long-term dredged material management options. It calls for equal consideration of upland, wetland, intertidal, and open water (in-Bay and ocean) sites, and potential structural measures to reduce the need for dredging. In this phase, the need for environmental, engineering, and economic studies was determined, and based on these a study plan was developed. The LTMS Study Plan — which included descriptions of study tasks, a program budget, and agency staffing needs — was adopted in 1991.

#### **2.1.3.3 Phase III: Detailed Analysis of Alternatives**

This phase provides for a thorough analysis of existing dredged material management, and detailed screening, evaluation, and selection of the preferred long-term dredged material management strategy. This EIS/EIR presents and documents the Phase III LTMS evaluation. This is a Policy EIS/Program EIR — intended to select the overall management approach the LTMS agencies will follow, as opposed to identifying all of the specific measures that may be

needed to fully implement the preferred approach. The Environmental Assessment Checklist that was prepared (see Appendix B) pursuant to the California Environmental Quality Act (CEQA) indicated that such a policy/programmatic document was required. Full implementation will involve many specific decisions addressing administrative, procedural, management, and monitoring issues that cannot be evaluated in detail until the overall management approach has been determined. These kinds of decisions will be considered in detail in Phase IV (Implementation) and Phase V (Periodic Review and Update) of the LTMS process. However, a variety of implementation issues that effectively serve as mitigation measures for any of the overall policy approaches, are discussed in Chapter 5 of this document. In addition, different options that the agencies will consider (during Phase IV) for achieving the distribution goals of the preferred alternative are presented in Chapter 7 for preliminary public comment.

Based on the preferred alternative, specific implementation measures will be initiated in Phase IV.

#### **2.1.3.4 Phase IV: LTMS Implementation**

The purpose of Phase IV is to develop and adopt the specific management plan for implementing the overall dredged material management approach selected in Phase III. In Phase IV, a draft Comprehensive Management Plan to replace the existing LTMS Interim Management Plan (LTMS 1994a) will be developed and circulated for public comment. Considerations for Phase IV plan development will include administrative, procedural, management, and monitoring requirements. Following the opportunity for public comment, the Management Plan will be finalized and adopted by the LTMS agencies. The Management Plan will include specific policies and procedures covering each of the available dredged material disposal or reuse sites, as well as a description of the agencies’ joint procedures for processing and making decisions about proposed dredging projects in the region.

#### **2.1.3.5 Phase V: Periodic Review and Update**

The final phase of LTMS development is the periodic re-evaluation of the Management Plan, based on changing regulatory, environmental, technologic, and economic conditions. Public involvement is a critical aspect of this periodic review. The intent of Phase V is to ensure that agency decisionmakers will maintain